REMARKS

Claims 1-69 are all the claims pending in the application.

Preliminary matters

Applicant contacted the Examiner regarding the title of the specification. Specifically, Applicant noted that USPTO has not confirmed the receipt of the "request for corrected official filing receipt" in which the Applicant noted an error in the title of the specification. The Examiner agreed that there was a discrepancy in the title of the specification between the records at the USPTO and the "request for corrected official filing receipt" submitted by the Applicant on October 11, 2005. Applicant requests the Examiner to confirm that a correction has been made in the next USPTO communication.

Rejection of claims 1-32, 34-65, 67 and 68 under § 102(b) as being anticipated by Crabtree

Claims 1-32, 34-65, 67 and 68 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Crabtree et al. (US 6,185,314). Applicant traverses these rejections because Crabtree fails to disclose or suggest all of the claim limitations.

Claim 1

A novel feature of claim 1 is a characteristic-quantity synthesizing means. The Examiner maintains that numeral 600 in conjunction with 500 in figure 2 of Crabtree discloses "a characteristic-quantity synthesizing means adapted to synthesize characteristic quantities of objects representative of characteristic quantities of respective objects included in said image information for generating synthesized characteristic quantities". Applicant, however, disagrees at least for the following reasons.

Crabtree discloses a model matcher 600 which evaluates each region cluster and returns a confidence score between 0 and 1 that represents the likelihood that the object is a particular object to be tracked, such as a person (col. 8, lines 6-12). Crabtree also discloses a region corresponder 500 which evaluates a degree of correspondence between an object extracted from the current frame and all objects from the previous frame (col. 8, lines 16-19). Essentially, the corresponder 500 is used to calculate a correspondence score to represent the likelihood of a match between an object of a current frame and an object from a previous frame. Applicant notes that a region corresponder 500 generates at least one feature for each object to be compared. Applicant believes that the Examiner correlates the generated at least one feature for each object by the corresponder 500 to the claimed characteristic quantity of an object. However, Crabtree fails to disclose that the corresponder 500 synthesizes these features of objects included in an image information. In addition, the Applicant notes that the model matcher 600 merely generates at least one real-world feature for each region cluster; however, the model matcher 600 does not synthesize these real world features of region clusters included in an image information.

Applicant notes that a big difference between the claimed invention and Crabtree is provision of a characteristic-quantity synthesizing means which is described in claim 1 of the present invention. Namely, while synthesized characteristic quantities are generated from characteristic quantities of a plurality of objects in an exemplary embodiment of the claimed invention, alleged synthesized characteristic quantities are not generated from alleged characteristic quantities of a plurality of objects in Crabtree. In Crabtree, the alleged characteristic quantities of an object are compared with alleged characteristic quantities of each object zone, thereby calculating degrees of reliability of belonging of an object to each object

zone. Then, it is determined whether an object belongs to a specific object zone. However, in Crabtree, similarly to McKenna et al. (which is described in the specification as related art), in the case where a plurality of objects are contained in a single object zone (for example, two people are superposed), etc., the alleged characteristic quantities of an object zone are added characteristic quantities of a plurality of objects. Therefore, the alleged characteristic quantities of an object zone in Crabtree are different from the alleged characteristic quantities of any object. Degrees of reliability of belonging of an object to each object zone are low. Hence, it is liable to lead to an erroneous judgment that an object belongs to a certain object zone. On the contrary, in an exemplary embodiment of the claimed invention, synthesized characteristic quantities are generated from characteristic quantities of a plurality of objects and, the synthesized characteristic quantities of a plurality of objects are compared with characteristic quantities of each object zone. Therefore, it is liable to lead to a correct judgment that a plurality of objects belong to a certain object zone, in the case where a plurality of objects are contained in a single object zone. Based on the above reason, the present invention claimed in claim 1 is not disclosed or suggested by Crabtree.

Applicant notes that the Examiner correlates a feature model information to the claimed synthesized characteristic information. The feature model information is merely a comparison tool to compare the size and location information determined for each region cluster with a standard statistical model information (col. 18, lines 17-20). In other words, the feature model information is a standard that is used to calculate a confidence value, for example, a confidence value that the object to be tracked is a person (col. 16, lines 10-21). Although the object model information comprises statistical information about the range of a valid person's heights, widths, height to width ratio and positions, Crabtree fails to disclose that the statistical information of the

feature model is representative of the characteristic quantities of respective objects included in said image information. In other words, the statistical information comprises data of real world objects and not characteristic quantities of respective objects included in an image information. Therefore, Applicant submits that the feature model information does not correspond to the claimed synthesized characteristic quantities.

Furthermore, Applicant submits that Crabtree fails to disclose an object-tracking device for tracking an object based on image information, comprising, *inter alia,* a correspondence-establishing means for establishing correspondences between object zones and objects on the basis of degrees of similarity between characteristic quantities of said object zones and said synthesized characteristic quantities, wherein said object zones refer to zones that are extracted from said image information and include the objects. In the response to the Office Action dated September 26, 2008, Applicant submitted that Crabtree merely discloses establishing correspondences between objects and not between objects and object zones. In response to the above, the Examiner in the Office Action dated March 27, 2009 alleges that "as an object zone is defined by the object within it, the object zones and objects are also distinguished from each other, thereby establishing a correspondence between object zones and objects". In addition, the Examiner alleges that the claimed characteristic quantities of object zones and synthetic characteristic quantities correspond to confidence scores and feature model information, respectively. Applicant, however, disagrees.

Assuming *arguendo,* that the claimed characteristic quantities of object zones and synthetic characteristic quantities correspond to confidence scores and feature model information, respectively, Applicant submits that the alleged correspondence is not consistent with the recitations of claim 1. Crabtree discloses generating a confidence score using the

feature model information (col. 18, lines 17-20). However, Crabtree fails to disclose comparing the confidence scores and the feature model information to establish correspondence information between object zones and objects. Therefore, confidence scores and feature model information do not correspond to the claimed characteristic quantities of object zones and synthetic characteristic quantities, respectively.

For at least the reasons submitted above, Applicant submits that claim 1 is patentable.

For reasons similar to those submitted for claim 1, Applicant submits that claims 34, 67 and 68 are patentable.

Claims 2-32 and 35-65, which depend from claims 1 or 34, are patentable by virtue of their dependencies.

Claim 3

In addition to being patentable by virtue of its dependency on claim 1, Applicant submits that claim 3 is patentable at least for the following reasons. Applicant submits that Crabtree fails to disclose an object-tracking device according to claim 2, provided with, *inter alia,* wherein said characteristic-quantity synthesizing means generates synthesized characteristic quantities through the use of said object characteristic quantities and the decision results effected by said state-of-tracking deciding means.

The Examiner alleges that a model matcher 600 and the feature model information correspond to the claimed characteristic-quantity synthesizing means and synthesized characteristic quantities, respectively. In addition, in response to the Applicant's remarks of December 29, 2008, the Examiner maintains that the model matcher 600 receives clusters and object information and generates feature model information. Applicant, however, notes that the model matcher 600 merely receives object model information from the OCGM 300 (col. 16,

lines 30-34). Since the feature model information is not generated by the model matcher, Applicant submits that the model matcher does not correspond to the claimed characteristic quantity synthesized means. For reasons similar to those submitted for claim 1, Applicant submits that the feature model information does not correspond to the claimed synthesized characteristic quantities.

For at least the reasons submitted above, Applicant submits that claim 3 is patentable.

Claim 5

In addition to being patentable by virtue of its dependency on claim 1, Applicant submits that claim 5 is patentable at least for the following reasons. Claim 5, for example, recites:

> An object-tracking device according to claim 3, wherein said state of tracking includes at least one of or a combination of: a stand-alone state in which only a single object resides in an object zone; a crossover state in which a plurality of objects correspond to a single object zone; and a state of parting that is a transient state in which a single object zone is parted into a plurality of object zones.

The Examiner alleges that split transition corresponds to the claimed state of parting. According to claim 5, a state of parting is a transient state in which a single object zone is parted into a plurality of object zones. On the other hand, split transitions occur in two image frames when the objects one again split into individual region clusters (col. 28, lines 46-48). Individual region clusters contain only one object, such as region clusters 302 and 306 depicted in figure 6 of Crabtree. In addition, in response to the Office Action dated September 26, 2008, Applicant submitted that Crabtree merely discloses establishing correspondences between objects and not between objects and object zones. In response to the above, the Examiner in the Office Action

dated March 27, 2009 alleges that "as an object zone is defined by the object within it, the object zones and objects are also distinguished from each other, thereby establishing a correspondence between object zones and objects". Since an object zone is defined by an object within it, according to the Examiner, Applicant submits that objects 302 and 306 are within their own object zones, respectively. Therefore, according to the Examiner's interpretation of an object and an object zone, a split transition leads to only one object zone and an object within it.

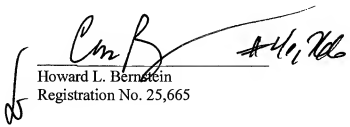
For at least the reasons submitted above, Applicant submits that claim 5 is patentable.

For reasons similar to those submitted for clam 5, Applicant submits that claim 6 is patentable.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: June 29, 2009